



## INSTRUCTION SHEET FOR JIMS TWIN CAM FLYWHEEL ASSEMBLIES &amp; BIG BORE KITS



**"Alpha" Stroker Kit  
(FLH, FXD)**

FOR THE FOLLOWING PART NUMBERS  
1501, 1501B, 1937, 1938, 1941, 1942,  
1957, 1958, 1959, 1960



**"Beta" Stroker Kit  
(FXST)**

**100" Big Bore Kit A or B Twin Cam Motors**

Part No.	Application	Stroke	Bore	Compression Ratio	Cylinder Finish
1501	Use on Alpha or Beta '99-Present	4"	4"	9.56:1	Silver
1501B	Use on Alpha Beta '99-Present	4"	4"	9.56:1	Black Wrinkle

**113" Twin Cam "Alpha" (FLH, FXD) Stroker Kits with Cylinders**

Part No.	Application	Stroke	Bore	Compression Ratio	Cylinder Finish
1937	Use on Alpha '99-Pres	4 1/2"	4"	9.94:1	Black Wrinkle
1938	Use on Alpha '99-Pres	4 1/2"	4"	9.94:1	Silver

**116" Twin Cam "Alpha" (FLH, FXD) Stroker Kits with Cylinders**

Part No.	Application	Stroke	Bore	Compression Ratio	Cylinder Finish
1941	Use on Alpha '99-Pres	4 5/8 "	4"	10.19:1	Black Wrinkle
1942	Use on Alpha '99-Pres	4 5/8"	4"	10.19:1	Silver

**WARNING!** "Beta" Stroker kits must never be revved any higher than 6,200 RPM!\*

**113" Twin Cam "Beta" (FXST) Stroker Kits with Cylinders**

Part No.	Application	Stroke	Bore	Compression Ratio	Cylinder Finish
1957	Use on Softails 2000-present	4 1/2"	4"	9.94:1	Black Wrinkle
1958	Use on Softails 2000-present	4 1/2"	4"	9.94:1	Silver

**116" Twin Cam "Beta" (FXST) Stroker Kits with Cylinders**

Part No.	Application	Stroke	Bore	Compression Ratio	Cylinder Finish
1959	Use on Softails 2000-present	4 5/8 "	4"	10.19:1	Black Wrinkle
1960	Use on Softails 2000-present	4 5/8"	4"	10.19:1	Silver

**NOTE:** 2003-Present Twin Cam Motor Cases will need H-D No.24004-03 Crank Shaft Bearing Kit.

**\*WARNING "BETA" STROKER USERS:**

Your JIMS® 116" & 113" "Balanced" Stroker Kit ships with a pressed on balancer drive gear. This gear was tested and proven to protect against potential damage caused by over-revving the engine past 6,200 RPM. **THIS GEAR WILL MOVE DUE TO OVER-REVING.** Your flywheels will NOT be warranted against movement of this gear due to over revving. In addition to this, the pressed on gear will NOT be available separately.

JIMS® insists that a 6,200 MAX RPM rev-limiting device be used at ALL times!

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## IMPORTANT PRODUCT INFORMATION FOR BOTH "ALPHA" & "BETA" STROKERS KITS

The following components are recommended by JIMS® for use with JIMS® stroker kits.

### **MANIFOLD FOR JIMS® TWIN CAM CARBURETED STROKER KITS**

No.700 -



(Manifold) Use with Mikuni Carburetor, Stock CV Carburetor or Screamin' Eagle CV Carburetor. (See adapter below.)

No.703 -

(Flange) for use with Part No.700 40mm CV or a 42mm Mikuni.

No.701 -

(Flange) for use with Part No.700 44mm CV or a 45mm Mikuni.

No.702 -

(Manifold) Use with S & S Super "G" Carburetor. Includes aluminum spacer. Customer must use his bakelite spacer.

No.725 -

(Head to Manifold Spacer) Use on taller than stock motors 1984-present. Use to fill and seal the 0.080" gap between the head and manifold, after you have installed about 0.100" taller cylinders. Comes with O-Rings. A must for EFI manifolds.



### **IMPORTANT CYLINDER PREPARATION**

Before installing cylinders on cases, the inner bores and gasket area must be scrubbed and cleaned with hot soapy water.

### **GASKET KITS FOR JIMS® TWIN CAM STROKER KITS**

No.858 - 113" & 116" Stroker Kits, 100" Big Bore Kits, 4" bore. Use on Twin Cam 88™ (Softail & Dyna). .040" Head Gasket, .020" Base Gasket.

No.859 - 113" & 116" Stroker Kits, 100" Big Bore Kits, 4" bore, Use on Twin Cam 88™ (FL Models). .040" Head Gasket, .020" Base Gasket.



### **COMPRESSION RELEASE VALVES**

Compression release valves are a must when building large displacement engines. These valves will manually vent cylinder compression to the atmosphere at startup.

Install JIMS® Compression Release Valves with JIMS® installation tool No.1169 for Twin Cam, or use JIMS® tapping tool No.1169-1 for all other engines.

No.727K - Use on all Big Twin, Sportsters and Buells.

### **IMPORTANT STARTER NOTE**

Due to the higher compression ratio created by the 113" & 116" stroker kits, your starter system efficiency may be reduced and may become prematurely damaged. JIMS® recommends installing high-output starter components (High heavy-duty gauge cables, heavy-duty battery, and high-output starter) along with compression release valves to maintain your starter system efficiency.

### **WARNING:**

(Note: Read all instructions before performing work)

Prior to installation of this kit please read and follow the procedures and safety precautions to reduce the risk of personal injury.

Refer to H-D® Service Manual for specifications and for removal and installation of the engine. Read instructions completely so you understand before performing any steps. Always disconnect battery cables to prevent injury. Your work place should be clean and well lit, wear safety glasses and protective clothing when working around power tools and compressed air.

Use authorized H-D® Service Manual for reference. If you are not sure about the procedures in these instructions, have a reputable H-D® repair shop perform those procedures for you.

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## INSTRUCTION SHEET FOR JIMS TWIN CAM FLYWHEEL ASSEMBLIES &amp; BIG BORE KITS

**ATTENTION!**: Please read all instructions completely and thoroughly before performing any work.

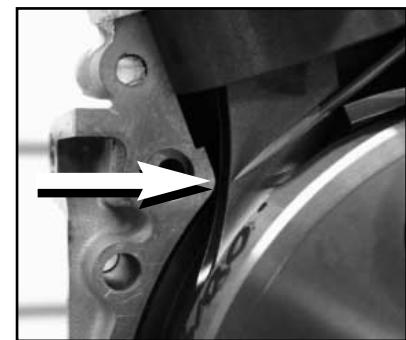
1. Follow instructions in H-D® Service Manual for removal of engine for your year and model. With engine removed from frame and sitting on the workbench, follow the disassembly instructions in the service manual to disassemble engine. Clean all parts thoroughly including gasket surfaces, and inspect all parts for visible damage. Measure all parts for wear using the service wear limit section in the H-D® Service Manual. Replace any worn or damaged parts with JIMS® engine parts or equivalent.
2. On 4" bore kits, 100", 113", and 116" you will be required to machine cases to accept 4" bore cylinders (use JIMS® No.1177 Case Boring Fixture). *See Picture No.1 & 2.* Bore to  $4.220" +.03/-0.00$  diameter at a depth of  $1.645" +.03/-0.00$  for the 116" & 113" kits and  $1.330" +.03/-0.00$  for the 100" kit measuring from the gasket surface. Before machining cases, you must remove cylinder studs and H.D.® piston oiling jets. *Note: You will be using JIMS® piston oiling jets for reassembly included with this kit.* Mask off all bearings and oil holes. Bolt cases together with H.D.® hardware. Tighten case bolts to factory spec. Check all cylinder studs and stud-threaded holes. Replace any damaged cylinder studs. JIMS® suggest using the latest cylinder studs from H-D® or Screamin' Eagle®.
3. After machine work is done, clean cases of all machine material. Follow H-D® Service Manual for installation of studs.
4. Checking Clearances: connecting rod to case, cylinder to cylinder, piston to piston, and piston to case, below cylinder spigot (both front and rear) See Pic.3. To make the job easier, use JIMS® No. 1745 Timken Bearing Simulator.
  - A. With flywheel assembly simulated in left case, install pistons without rings. Pistons can be installed in either location, front or rear. Mount both cylinders and pistons to left case. *NOTE: On 4" bore cylinders; there is a relief area on the cylinder spigot.* Each 4" bore cylinder and piston must have the reliefs on the cylinder spigot facing each other when installed on cases. *See Picture No. 4*
  - B. Check and if necessary grind or file for a minimum clearance of .060 between rod and case. *See Picture No.3*  
*NOTE: Only remove material from the case and not the rods!*
  - C. Check and if necessary grind or file for a minimum clearance of .050 between cylinder spigots and a minimum clearance of .060 between piston skirts. *See Picture No.4*  
*NOTE: Clean all machine material from cases.*  
*CAUTION!: Only remove enough material to maintain the minimum clearance.*



Picture No.1



Picture No.2



Picture No.3



Picture No.4

**CAUTION: WEAR SAFETY GLASSES. EXCESSIVE FORCE MAY DAMAGE PARTS AND TOOL. SEE JIMS® CATALOG FOR OVER 200 OTHER TOP QUALITY PROFESSIONAL TOOLS. THE LAST TOOLS YOU WILL EVER NEED TO BUY.**

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&lt;--- Instructions continued from page 3

5. After checking all clearances for proper fitment, install piston oiling jets into right case half. All kits are provided with new piston oiling jets except the 100" Big Bore Kit. This kit will use the original H-D® piston oiling jets. Before installing piston-oiling jets, clean threads in case. Then apply a drop of loctite 222 (purple) to the last few threads. (**CAUTION:** *Keep all foreign material out of piston oiling jets*). Install the new o-rings in the groove on the piston oiling jets and then apply a very thin film of clean 20-50 engine oil to the new o-rings. Torque the new Allen screws to 20-30 (inch) lbs.

**NOTE:** These threads in the engine case are very delicate so be careful not to cross thread these screws or over-torque.

**NOTE:** For future service of JIMS® piston oiling jets, use O.E.M. P/N 26432-76A for o-ring replacement.

6. Pistons and cylinders in these kits are cleared for installation. Below is the clearance information. Always check fitment and clearance before final assembly. See Picture No.5

**NOTE:** Check H-D® service manual for ring positioning around each piston, also read the instructions within your piston set box for installing rings on pistons.

**NOTE:** When installing JIMS flywheel into a 2003 or later case, you must use crankshaft roller bearing kit H-D No.24004-03 in the left side crank-shaft bore.

7. Assemble per H-D® Service Manual. **NOTE:** When assembling case halves together, seal with High-Performance Sealant H-D No.99650-02 or equivalent.
  - A. Tighten case bolts to factory specs except top center case bolt between cylinders.
  - B. Install top center bolt last after you have cylinders and heads installed and torqued to H-D® specs. **NOTE:** When installing 4" bore cylinders on cases, they need to have the relief on bottom of skirt facing each other when installed as shown in picture No.4
  - C. Apply High-Performance Sealant H-D No.99650-02 to shoulder of top center case bolt and torque to 50-90-inch lbs maximum. See Picture No.6 You can use your stock manifold for 100" Big Bore Kit and 113" stroker kits. For 116" kits you will need JIMS® manifold (JIMS® No.700 or 702) or flange (JIMS® No.703, 701, or 725) for your carburetor application. (See page 2)

**Note:** Before installing head gasket

If you are using a 3 layer riveted "EST" style head gasket and you have aftermarket heads, you may find that you have interference with the rivet in the head gasket. If so, use a smooth jaw vice to reduce the thickness of the rivet before installation.

Instructions continued on page 5 -->

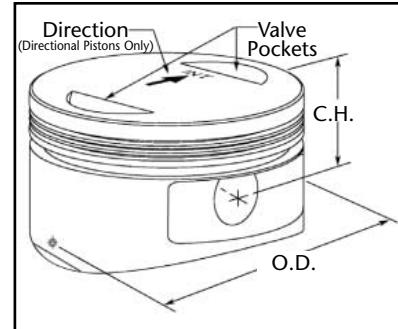
**NOTE:** It is the engine builder's responsibility to check and confirm all operating clearances when installing any JIMS® products.

**Ring End Gaps: For Ductile moly rings TC 88™**

Top compression ring	.016" - .022"
2nd compression ring	.016" - .022"
Oil control Ring rail	.016" - .050"

**Piston Clearance Information**

Minimum.	.002 Clearance
Maximum	.003 Clearance



**Picture No.5**

When installing pistons, position the piston so that the arrow marked on the top of the piston points in the direction of the intake valve. See above picture.



**Picture No.6**



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**BREAK IN PROCEDURE**

After final assembly, the engine must be broken in. Over revving or lugging engine could cause damage to pistons and/or other engine components.

On the initial start up, excessive heat build up can occur. Do not over heat by revving engine or running at a fast idle too long.

To ensure proper head gasket seal upon first time engine start up, idle engine 1000-1500 R.P.M. until cylinder head temperature reaches about 250 degrees. Shut engine off and let cool. This procedure is necessary to properly seal top end components.

**CAUTION: Improper initial engine start up may cause head gaskets to fail prematurely.**

Because most engine damage could occur during the first 50 miles, keep the heat down by not exceeding 2800 R.P.M., but do not lug engine.

Continue to vary speed for the next 500 miles and do not exceed 3800 R.P.M.. For the balance of the first 1000 miles, avoid overheating engine. Do not lug engine or idle for long periods of time. No trailer towing, racing, etc.

Change oil and filter after the first 500 miles.

**WARNING! "Beta" Stroker kits must never be revved any higher than 6,200 RPM!**

**Compression Table**

Kit	Stock Head C.R.	Screamin' Eagle Head C.R.
	96.2cc Swept Volume .040" Gasket	86.3cc Swept Volume .040" Gasket
113"	9.94:1	10.88:1
116"	10.19:1	11.2:1

\* Stock Twin Cam Head= 85.9cc  
\* Screamin' Eagle Head = 76.0cc  
Swept Volume=(Combustion Chamber Volume + Gasket Volume + Valve Pocket Volume)

**WARRANTY**

All JIMS® parts are guaranteed to the original purchaser to be free of manufacturing defects in materials and workmanship for a period of 6 (six) months from the date of purchase. Merchandise that fails to conform to these conditions will be repaired or replaced at JIMS® option if the parts are returned to us by the purchaser within the 6 (six) month warranty period or within 10 (ten) days thereafter. In the event warranty service is required, the original purchaser must call or write JIMS® immediately with the problem. Some problems can be rectified by a telephone call and need no further course of action. A part suspected of being defective must not be replaced by a Dealer without prior authorization from JIMS®. If it is deemed necessary for JIMS® to make an evaluation to determine whether the part is defective, it must be packaged properly to prevent further damage and be returned pre-paid to JIMS® with a copy of the original invoice of purchase and a detailed letter outlining the nature of the problem, how the part was used and the circumstances at the time of failure. If after an evaluation has been made by JIMS® and the part was found to be defective, repair, replacement or credit will be granted.

**ADDITIONAL WARRANTY PROVISIONS**

1. JIMS® shall have no obligation in the event a JIMS® part is modified by any other person or organization.
2. JIMS® shall have no obligation if a JIMS® part becomes defective in whole or in part as a result of improper installation, improper maintenance, improper use, abnormal operation, or any other misuse or mistreatment of the part.
3. JIMS® shall not be liable for any consequential or incidental damages resulting from the failure of a JIMS® part, the breach of any warranties, the failure to deliver, delay in delivery, delivery in nonconforming condition, or for any other breach of contract or duty between JIMS® and a customer.
4. JIMS® parts are designed exclusively for use in Harley-Davidson® motorcycles. JIMS® shall have no warranty or liability obligation if a JIMS® part is used in any other application.
5. Any parts which have been replaced for any reason become the property of JIMS®, and will not be returned under any circumstances.

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***Recommended Tools:***

Part No.	Description
JIMS® No.2234	Primary drive locking tool (A must)
JIMS® No.1288	Crankshaft guide (A must)
JIMS® No.1287	Cylinder torque plates (A must)
JIMS® No.1726-3	Wristpin bushing reamer tool (As needed)
JIMS® No.1051	Connecting rod bushing tool (As needed)
JIMS® No.1283	Cam chain tensioner tool (A must)
JIMS® No.1285	Cam crank sprocket lock tool (A must)
JIMS® No.1276	Wristpin remover (A must)
JIMS® No.1047TP	Crank assembly removing tool (A must)
JIMS® No.1048	Hard cap (A must)
JIMS® No.39361-69	Motor sprocket seal installation tool (A must)
JIMS® No.1022	Engine stand or base (1145) w/1140-"A" motor /1142-"B" (A must)
JIMS® No.97225-55	Sprocket shaft bearing installation tool (A must)
JIMS® No.1745	Timken bearing simulator (As needed)
JIMS® No.1236	Piston ring compressor tool (A must)
JIMS® No.1235	Ring expander tool
JIMS® No.1169	Compression Release Valves
JIMS® No.1177	Case Boring Tool
JIMS® No.1163	Balancer Shaft Retention Pins
Dial indicator	For measuring endplay of crankshaft

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